

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Listing of Claims:

1. (currently amended): Reactor for carrying out photocatalysed reactions in liquid or gaseous reaction media, consisting ofcomprising:
a reactor vessel with a solid photocatalyst;—;
feed lines and take-off lines;—;
mixing means, and;
a means of supplying electromagnetic radiation;—; and
characterized in that phosphorescent particles are present which are microradiators
suitable for absorbing the electromagnetic radiation and, with a time delay, for emitting light which excites the photocatalyst.
2. (currently amended): Reactor according to Claim 1, characterized in that the radiation sourcewherein the means of supplying electromagnetic radiation is mounted on a radiation-transparent wall or in the interior of the reactor vessel and the mixing means is suitable for conveying the phosphorescent particlesmicroradiators from the interior of the reactor vessel to the radiation source and back.
3. (currently amended): Reactor according to Claim 1, characterized in that thewherein the means of supplying electromagnetic radiation is composed of a lamp and a fluid channel which communicates with the reactor vessel via transport lines and conveying means for the phosphorescent particlesmicroradiators.
4. (currently amended): Reactor according to Claim 3, characterized in thatwherein the lamp is of rod-shaped design and is surrounded by the fluid channel in the form of a jacket.

5. (currently amended): Reactor according to Claim 3 or 4, characterized in that, wherein the reactor vessel is provided with means for separating the phosphorescent particles microradiators from the photocatalyst and/or from the reaction medium.
6. (currently amended): Reactor according to Claims 1 to 5, Claim 1, suitable for the oxidation of organic impurities in water or wastewater, characterized in that wherein feed lines are provided for air or oxygen and exhaust lines for the waste gases.
7. (currently amended): Reactor according to Claims 1 to 6, characterized in that Claim 1, wherein the reactor vessel is a fluidized bed reactor, a continuous-flow or tube reactor, a fixed bed reactor or a stirred tank reactor.
8. (currently amended): Reactor according to Claims 1 to 7, characterized in that Claim 1, wherein the photocatalyst have-has a particle diameter of from 1 nm to 100 μm in suspension reactors or from 1 μm to 1 mm in fluidized-bed reactors or fixed-bed reactors.
9. (currently amended): Reactor according to Claims 1-8, characterized in that the phosphorescent particles Claim 1, wherein the microradiators have a phosphorescence half-life of from 5 seconds to 30 minutes and a particle size of from 1 nm to 1 mm, preferably from 10 μm to 0.5 mm.
10. (cancelled)
11. (currently amended): Phosphorescent particles Microradiators according to Claim 10, characterized in that 21, wherein the support consists of magnetic material.
12. (currently amended): Phosphorescent particles Microradiators according to Claims 10 or 11, characterized in that 21, wherein the support is covered with a radiation-transparent layer.
13. (cancelled)

14. (currently amended): Process according to Claim 13, characterized in that 23, wherein after emitting their energy the phosphorescent particles are conveyed past the radiation source again and recharged.

15. (currently amended): Process according to Claim 14, characterized in that the phosphorescent particles wherein the microradiators are separated from the photocatalyst and/or from the reaction medium before being passed to a separate radiation source and activated, before being then passed back into the reaction medium.

16. (currently amended): Process according to Claims 13 to 15, characterized in that Claim 23, wherein the photocatalytic reaction is an oxidation of organic compounds in aqueous solution.

17. (currently amended): Process according to Claims 13 to 16, characterized in that Claim 23, wherein the catalyst is TiO₂ particles and the phosphorescent particles microradiators are glass particles which have been doped with rare earth elements and can be excited with UV light or visible light.

18. (new): Reactor according to Claim 2, wherein the reactor vessel is provided with means for separating the phosphorescent particles from the photocatalyst and/or from the reaction medium.

19. (new): Reactor according to Claim 4, wherein the reactor vessel is provided with means for separating the microradiators from the photocatalyst and/or from the reaction medium.

20. (new): Reactor according to Claim 9, wherein the microradiators have a particle size of from 10 µm to 0.5 mm.

21. (new): Microradiators for use in reactors for carrying out photocatalysed reactions in liquid or gaseous reaction media, said reactor comprising a reactor vessel with a solid photocatalyst, feed lines and take-off lines, mixing means, and a means of supplying electromagnetic radiation, wherein the microradiators are suitable for absorbing the supplied electromagnetic radiation and, with a time delay, for emitting light which excites the

photocatalyst, said microradiators consisting of a phosphorescent material which has been applied to a support having a particle size of from 1 nm to 1 mm.

22. (new): Microradiators according to Claim 11, wherein the support is covered with a radiation transparent layer.

23. (new): Process for carrying out photocatalytic reactions, comprising the steps of:

- a) providing solid photocatalysts;
- b) suspending the photocatalysts in a liquid or gaseous reaction medium or applying them to a surface;
- c) providing microradiators which are charged up at an electromagnetic radiation source and which emit this energy with a time delay; and
- d) activating the photocatalysts by means of the microradiators.